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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/608,187 | 06/30/2003 | Heume Il Baek | 049128-5114 | 8785 |
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| MORGAN LEWIS & BOCKIUS LLP | | | EXAMINER | |
| 1111 PENNSYLVANIA AVENUE NW | | | PIZIALI, JEFFREY J | |
| WASHINGTON, DC 20004 | | | ART UNIT | PAPER NUMBER |
| | | | 2629 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

| | |
|-----------------|--------------|
| Application No. | Applicant(s) |
| 10/608,187 | BAEK ET AL. |
| Examiner | Art Unit |
| Jeff Piziali | 2629 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 October 2007.
2a) This action is FINAL. 2b) This action is non-final.
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2,4,5,7-10 and 12-14 is/are pending in the application.
4a) Of the above claim(s) 4,5,7,8,13 and 14 is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1,2,9,10 and 12 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
10) The drawing(s) filed on 30 June 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
5) Notice of Informal Patent Application
6) Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 October 2007 has been entered.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 2, 9, 10, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

The omitted structural cooperative relationship in question is a result of the phrase, "*the turn-ON voltage is supplied the gate lines*" (see both independent claims 1 and 9, last two lines).

It would be unclear to one having ordinary skill in the art whether the turn-ON voltage is "supplied to" or "supplied from" or "supplied via" the gate lines.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 9, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yasuda et al (US 4,842,371 A)* in view of *Saishu et al (US 5,949,391 A)*.

Regarding claim 1, Yasuda discloses an electric field alignment method of a twisted nematic liquid crystal display device (see Column 22, Lines 17-21), comprising: connecting a plurality of thin film transistors [Fig. 1; T₁₁-T₄₄] arranged along a first direction to a plurality of data lines [Fig. 1; S₁-S₈] in an offset configuration between adjacent data lines (see Column 6, Line 54 - Column 7, Line 40); supplying a turn-ON voltage [Fig. 4; b & c] at a level greater than a threshold voltage of the thin film transistors during an electric field alignment of liquid crystal material of the liquid crystal display device to a plurality of gate lines [Fig. 1; G₁ & G₂] arranged along a second direction; and supplying voltages [Fig. 4; d] for electric field alignment and of opposite polarity to the adjacent data lines during the electric field alignment while constantly maintaining a voltage [Fig. 4; e-j] of a liquid crystal cell [Fig. 1; 2 & 3] of the liquid crystal display device during the electric field alignment (see Column 8, Line 67 - Column 9, Line 49); wherein an electric field [Fig. 4; e-j] is applied to the liquid crystal cell by using a leakage

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current of the thin film transistors [Fig. 1; T₁₁-T₄₄] (see Column 12, Lines 42-56), and wherein the turn-ON voltage is supplied the gate lines in a range between ten to four-hundred times during the electric field alignment (see Fig. 10; Column 11, Lines 54-62). Yasuda does not expressly disclose the twisted nematic liquid crystal display could also be a ferroelectric liquid crystal display.

However, Saishu does disclose using ferroelectric liquid crystal in place of twisted nematic liquid crystal (see Column 1, Lines 20-32). Yasuda and Saishu are analogous art, because they are from the shared field of driving thin film transistors in an offset configuration for liquid crystal display devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to replace Yasuda's twisted nematic liquid crystal with Saishu's ferroelectric liquid crystal, so as to improve display response speed and viewing angle.

Regarding claim 2, Yasuda discloses the liquid crystal cell operates in a Half V-Switching Mode (see Fig. 13; Column 15, Lines 3-12).

Regarding claim 9, this claim is rejected by the reasoning applied in rejecting claim 1; furthermore, Yasuda discloses a gate driving circuit [Fig. 1; G₁ & G₂] and a data driving circuit [Fig. 1; 111 & 112] (see Column 6, Line 54 - Column 7, Line 40).

Regarding claim 10, this claim is rejected by the reasoning applied in rejecting claim 2.

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Regarding claim 12, Yasuda discloses the data driving circuit supplies video data [Fig. 4; d] having different polarities to the adjacent data lines during driving of the display device (see Column 8, Line 67 - Column 9, Line 49).

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

8. Applicants' arguments filed 15 October 2007 have been fully considered but they are not persuasive.

The Applicants contend, "*The analog gamma voltage means the voltages for electric field alignment. Also, the timing controller 8 supplies a R, G, and B digital video data to the data driving circuit during a normal driving for displaying substantially an image. Thus, the voltages for electric field alignment are basically different from the R, G, and B digital video data. In contrast, an odd- and even-numbered field color signals of Yasuda (Column 8, Line 67 - Column 9, Line 49) represents R, G, and B digital video data for displaying substantially an image*

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during a normal driving" (see Page 8, Paragraph 1 of the 'Amendment with RCE Filing' filed 15 October 2007). However, the examiner respectfully disagrees.

In response to Applicants' argument that the references fail to show certain features of Applicants' invention, it is noted that the features upon which Applicants rely (i.e., "*analog gamma voltages*" being the "*voltages for electric field alignment*") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Yasuda discloses supplying voltages [Fig. 4; d] for electric field alignment and of opposite polarity [Fig. 4; + and -] to adjacent data lines [Fig. 1; S₁-S₈] during the electric field alignment [Fig. 4; (g) labeled 60Hz time period, for example] while constantly maintaining a voltage [Fig. 4; e-j] of a liquid crystal cell [Fig. 1; 2 & 3] of the liquid crystal display device during the electric field alignment (see Column 8, Line 67 - Column 9, Line 49), as instantly claimed.

The Applicants also contend, "*the present invention supplies a turn-ON voltage to a gate lines in a range of from ten to four-hundred times during the electric field alignment. Yasuda, as indicated by the Examiner relating to claim 3, merely discloses in Fig. 10 and Column 11, Lines 54-62 a vertical synchronizing signal. In general, the vertical synchronizing signal is a clock signal for driving a LCD. Thus, Yasuda does not disclose 'supplying a turn-ON voltage to a gate lines in a range of from ten to four-hundred times during the electric field alignment' of the*

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claimed invention" (see Page 8, Paragraph 1 of the 'Amendment with RCE Filing' filed 15 October 2007). However, the examiner again respectfully disagrees.

In particular, Yasuda teaches the array of liquid crystal cells [Fig. 1; C11, C21, C31, C12, C22, AND C32] being driven respectively by voltages [Fig. 4; (e) to (j)]. For instance, during the "60Hz" time period illustrated in [Fig. 4; (g) -- i.e., "during the electric field alignment"], each voltage [Fig. 4; e-j] of the corresponding liquid crystal cells [Fig. 1; 2 & 3] of the liquid crystal display device are maintained, as instantly claimed.

Yasuda illustrates there being sixteen transistors [Fig. 1; T₁₁ - T₄₄] which receive the turn-ON voltage [Fig. 4; (b) & (c)] from the gate lines [Fig. 1; G1 & G2]. As such, one having ordinary skill in the art would recognize that the turn-ON voltage is supplied sixteen separate times (to each individual pixel transistor) during the electric field alignment. Wherein the closest transistor [e.g., Fig. 1; T1] to the gate line terminal [e.g., Fig. 1; G1] will inherently receive the turn-ON voltage before the farthest transistor [e.g., Fig. 1; T21] from the same gate line terminal [e.g., Fig. 1; G1], because transmission lines all inherently introduced a measurable amount of delay.

Yasuda discloses an electric field alignment method of a twisted nematic (TN) liquid crystal display device (see Column 22, Lines 17-21). Yasuda does not expressly disclose the twisted nematic (TN) liquid crystal display could also be a ferroelectric liquid crystal (FLC)

display. However, Saishu clearly does disclose using ferroelectric liquid crystal (FLC) in place of twisted nematic (TN) liquid crystal (see Column 1, Lines 20-32).

Yasuda and Saishu are analogous art, because they are from the shared field of driving thin film transistors in an offset configuration for liquid crystal display devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to replace Yasuda's twisted nematic liquid crystal with Saishu's ferroelectric liquid crystal, so as to improve display response speed and viewing angle.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeff Piziali
21 December 2007